SUMMARY

INTRODUCTION

PURPOSE OF THE EIS

The purpose of an environmental impact statement (EIS) is to satisfy the requirements of the National Environmental Policy Act (NEPA),[1] which requires preparation of an EIS for any proposed project that:

- Is not categorically excluded or otherwise exempt from NEPA
- Is a major federal action (i.e., requires a permit, regulatory decision, or funding from a federal agency)
- May have a significant adverse effect on the quality of the human environment

NEPA mandates that the EIS determine, characterize, analyze, and document the project's environmental impacts, as well as specify possible mitigation of adverse impacts.

An essential element of the NEPA process is interactive public participation, whereby a draft EIS is published and comments are solicited from the general public and interested parties (including governmental entities, regulatory agencies, and Native organizations). These comments may range from simple statements of support or opposition to complex technical discussions of project alternatives, study methods, determination and characterization of impacts, mitigation recommendations, et al. The final EIS documents and responds to all comments.

ORGANIZATION OF THE EIS

The EIS is organized as follows:

- Summary
- Contents (including listings of all tables, figures, and appendices)
- Acronyms and Abbreviations
- Chapter 1: Purpose of and Need for Action
- Chapter 2: Alternatives
- Chapter 3: Affected Environment
- Chapter 4: Environmental Consequences
- Chapter 5: List of Preparers
- Chapter 6: EIS Distribution List
- Chapter 7: Comments and Coordination
- References
- Index

[1] National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190, U.S. Code 4321-4347, January 1, 1970, as amended).

- Appendices:
  - A Preliminary Quantities and Cost Estimate Technical Memorandum
  - B Pennock Island and Gravina Island/Clam Cove Public Outreach Summary
  - C Conceptual Stage Relocation Study
  - D Economic Impact Assessment
  - E Wind Climatology Technical Memorandum
  - F Consequences of Various Channel Closures to Large Shipping
  - G Reconnaissance of Vessel Navigation Requirements
  - H Monte Carlo Navigation Simulation Technical Memorandum
    Supplemental Monte Carlo Navigation Simulation Study Technical Memorandum
  - I RTM STAR Center Report
  - J Real Time Navigation Simulation Study (STAR Center) Technical Memorandum
  - K Effects on Cruise Ship Operations
  - L Draft U.S. Army Corps of Engineers Section 10/404 Permit Application, Preliminary Jurisdictional Determination, and Draft 404 (b)(1) Analysis
  - M Wetlands Evaluation Technical Memorandum
  - N Marine Environment Impact Assessment Technical Memorandum
  - O Essential Fish Habitat Assessment
  - P Hazardous Materials Investigation Report
  - Q Estimate of Air Quality Impacts
  - R Public and Agency Comment

PROPOSED ACTION

The proposed action is to improve surface transportation between Revillagigedo Island and Gravina Island in the Ketchikan Gateway Borough of Alaska. Known as the Gravina Access Project, this project is one of 17 high-priority infrastructure projects in the State of Alaska to be federally funded under the Federal Transportation Equity Act for the 21st Century (TEA-21), enacted in 1998. The TEA-21 authorizes approximately $20 million for construction of a bridge joining Gravina Island to the community of Ketchikan on Revillagigedo Island. Current federal funds for the project require a 20 percent state match. The Alaska Department of Transportation and Public Facilities (DOT&PF) currently has the Alaska State Legislature's authority to proceed with expenditure of up to $10 million for the Gravina Access Project; additional funding would be necessary to construct any of the build alternatives.

Currently, there is no "hard link" (surface) transportation between Gravina Island and Revillagigedo Island. Public access between the islands is available via a ferry that transports vehicles, bicyclists, and pedestrians from Ketchikan across Tongass Narrows to the Ketchikan International Airport terminal on Gravina Island. The proposed action addresses the need for

improved access to developable land, improved access to the airport, and long-term economic development on Gravina Island. Chapter 2 provides a detailed description of the purpose of and need for the project.

The DOT&PF, in cooperation with the Federal Highway Administration (FHWA), has examined a range of alternatives for the Gravina Access Project: four bridge alternatives that cross Tongass Narrows near the airport, two bridge alternatives that cross Pennock Island, and three ferry alternatives that would supplement the existing airport ferry service. The terminus locations on Revillagigedo Island for each of the alternatives tie into Tongass Avenue at or near (from North to South) Peninsula Point, Signal Road, the existing airport ferry, Cambria Drive, Plaza Mall, the U.S. Coast Guard (USCG) Station, and the Forest Park subdivision. On Gravina Island, each alternative has a terminal location at Ketchikan International Airport and provides access to Borough and other developable land north of the airport. With the exception of one of the ferry alternatives, all build alternatives have a terminus on Gravina Island at the northern boundary between the airport property and Borough property. The ferry alternative that does not have a terminus at the airport-Borough property boundary originates north of that boundary at Lewis Point.

All of the build alternatives include a roadway around the southern end of the airport runway connecting the airport terminal to a spine road on the west side of the airport. Preliminary engineering and environmental studies, as well as input from state and federal agencies, indicated that this southern route around the airport was the only reasonable location of this roadway because a northern route around the airport would require extensive fill in Tongass Narrows, which would have unreasonable environmental impacts to intertidal areas and other sensitive habitat.

The roadway associated with each project alternative would consist of two lanes. The length of roadway varies from 16,670 feet to 42,100 feet, depending on alternative.

The project's potential for significant impacts prompted DOT&PF and FHWA to prepare an EIS. A notice of intent to prepare an EIS was published in the Federal Register in September 1999.

RELATED ACTIONS AND PROJECTS

In addition to the Gravina Access Project, there are three major actions being led by local, state, and federal agencies in the Ketchikan Gateway Borough. These actions are independent of the Gravina Access Project, but are related to the project because they could affect the same areas and resources.

The three major actions and their relationship to the Gravina Access Project are described as follows.

1. The Ketchikan Gateway Borough is engaging in a planning effort called *Ketchikan 2020* concurrent with the Gravina Access Project. This planning project includes an update of the *Comprehensive Plan*, a *Gravina Island Development Plan*, a *Coastal Management Program Update*, and a *Wetland Development Plan*. To date, the Borough has published a draft *Gravina Island Development Plan*, prepared an internal Borough draft of the *Coastal Management Program Update*, and developed a work plan for completing the *Wetland Development Plan.* The Borough has not started its update of the *Comprehensive Plan*.

The draft *Gravina Island Development Plan* is intended to guide future development of Gravina Island in tandem with the selection of the preferred alternative for the Gravina Access Project; however, fulfillment of the plan is not dependent on the selection of any one alternative in particular. The plan identifies five areas as planning units based on land ownership, current land use, and accessibility (including existing and potential road corridors).

2. The DOT&PF has recently (June 2003) updated its master plan for Ketchikan International Airport. The updated Ketchikan International Airport Master Plan includes recommendations for extension of the runway; improvements to the passenger terminal facility; development of a remote facility (i.e., on Revillagigedo Island), which would include key functional elements of a passenger terminal such as parking, ticketing, baggage check-in, and car rental; and a new general aviation apron. The selection of any of the build alternatives will require revisiting the master plan's recommendation for the development of a remote facility.

   Because the airport terminal is one of the termini of the Gravina Access Project, development of project alternatives was closely coordinated with the airport master planning effort. The master plan recommendations include options that provide for improved access to Gravina Island, but are not dependent on the development of any one of the Gravina Access Project build alternatives.

3. The U.S. Forest Service (USFS)_has prepared a draft EIS for the Gravina Island Timber Sale to evaluate the impacts of a timber sale and increased access for recreational pursuits. The *Gravina Island Timber Sale Draft Environmental Impact Statement* was released in January 2001. Following the comment period on the draft EIS, preparation of the Final EIS was put on hold, pending resolution of the USFS rulemaking on roadless area conservation. Once the final rule on roadless area conservation is issued (expected at the end of 2003[2]), the USFS will prepare a Final EIS for the timber sale.

   The preferred alternative presented in the Gravina Island Timber Sale draft EIS involves construction of 22.6 miles of new road on Gravina Island to facilitate logging activities. The new logging road would tie into the Borough's proposed gravel road between the airport and the Pacific Log and Lumber timber processing facility north of the airport. After the logging, the main portion of the road (approximately 16 miles) would remain open for recreational purposes.

   Note that all of the alternatives presented in the Gravina Island Timber Sale draft EIS are independent of the Gravina Access Project. The Timber Sale draft EIS does not address a future condition where access to Gravina Island would be improved through a bridge or additional ferry service. Although the Gravina Access Project EIS examines the potential cumulative effects of improving access to Gravina Island and developing new roads for the timber sale on the natural and human environments (Section 4.27), improved access for timber harvest is not a part of the purpose and need of the Gravina Access Project.

2 Jerry Ingersoll, District/Monument Ranger, Tongass National Forest, U.S. Forest Service, personal communication with C. Snead, Environmental Planner, HDR Inc. July 9,2003.

SUMMARY OF GRAVINA ACCESS PROJECT ALTERNATIVES CONSIDERED

The Gravina Access Project EIS presents and analyzes the following alternatives:

No Action Alternative—Existing Ferry Between Airport Ferry Terminals

Alternative C3(a)—200-foot Bridge Between Signal Road and South of Airport Terminal

Alternative C3(b)—120-foot Bridge Between Signal Road and Airport Terminal

Alternative C4—200-foot Bridge Between Tongass Avenue (North of Cambria Drive) and South of Airport Terminal

Alternative D1—120-foot Bridge Between Tongass Avenue (near Existing Ferry) and Airport Terminal

Alternative F1 (Preliminary Preferred Alternative)**—**Bridges (200-foot East and 120-foot West) Between Tongass Avenue and Airport, via Pennock Island

Alternative F3—Bridges (60-foot East and 200-foot West) Between Tongass Avenue and Airport, via Pennock Island

Alternative G2—Ferry Between Peninsula Point and Lewis Point

Alternative G3—Ferry Between Downtown and South of Airport

Alternative G4—Ferry Between New Terminals Adjacent to Existing Terminals

Following are brief descriptions of the alternatives, with additional detail on the DOT&PF preliminary Preferred Alternative: Alternative F1. Chapter 2 includes more detailed descriptions of each alternative.

No Action Alternative

Under the No Action Alternative, no bridge would be constructed and no additional ferry service would be provided between Revillagigedo Island and Gravina Island (see Figure 2.5). The only public access between the two islands would continue to be provided by the existing airport ferry service across Tongass Narrows, private boats, and floatplanes. On Revillagigedo Island, the existing ferry terminal is located 2.8 miles north of downtown Ketchikan; on Gravina Island, the terminal is on the waterfront, just east of the airport terminal. The Borough operates the airport ferry service. The ferry service would continue to operate 16 hours per day and the frequency of service would remain the same, with departures every 30 minutes in winter and every 15 minutes in summer.

Alternative C3(a): 200-foot Bridge Between Signal Road and South of Airport Terminal

Alternative C3(a) includes a bridge across Tongass Narrows approximately 1,600 feet north of the airport terminal (see Figure 2.6). The bridge would be 5,690 feet long, and have a maximum height of approximately 250 feet. The main span of this bridge would have a vertical

navigational clearance of 200 feet above high tide and a horizontal navigational clearance of approximately 550 feet.[3]

On Revillagigedo Island, the alternative would connect to Signal Road at North Tongass Avenue. From this terminus, the alternative alignment would traverse the hillside southward, gain elevation and turn southwestward to cross Tongass Avenue and Tongass Narrows, and then turn southward to parallel the airport runway and touch down (reach the ground surface) on Gravina Island south of the terminal. A 0.4-mile-long airport return loop road would connect the airport terminal and the bridge terminus. The main road would continue around the southern end of the airport runway and then arc northward, extending parallel to and west of the airport runway approximately 2.2 miles to the northern end of the Airport Reserve zone. At the southern end of the runway, the road would be constructed at a grade low enough to accommodate the planned future expansion of the runway, with the runway extended as an overpass of the road.

Alternative C3(b): 120-foot Bridge Between Signal Road and Airport Terminal

The Alternative C3(b) bridge would be approximately 4,250 feet long, and have a maximum height of approximately 195 feet. The main span of this bridge would have a vertical navigational clearance of 120 feet above high tide and a horizontal navigational clearance of approximately 500 feet. Horizontal clearances were determined pursuant to footnote 3 above.

Alternative C3(b) would have the same general alignment on Revillagigedo and Gravina Islands as Alternative C3(a); however, with a lower bridge profile, the position of the C3(b) bridge over Tongass Narrows and at its touchdown on Gravina Island (near the airport terminal) would be north of the C3(a) alignment (see Figure 2.7). This alternative would not need an airport return loop road because the bridge would touch down in front of the airport terminal.

Alternative C4: 200-foot Bridge Between Tongass Avenue North of Cambria Drive and South of Airport Terminal

The Alternative C4 bridge would be approximately 4,980 feet long and have a maximum height of approximately 250 feet. The main span of this bridge would have a vertical navigational clearance of 200 feet above high tide and a horizontal navigational clearance of approximately 550 feet. Horizontal clearances were determined pursuant to footnote 3 above.

On Revillagigedo Island, the alternative alignment would connect to Tongass Avenue north of Cambria Drive, across from the access to the existing ferry terminal (see Figure 2.8). From this terminus, it would extend northward and traverse the hillside around the quarry. The bridge would cross over Tongass Avenue and Tongass Narrows, turn southward to parallel the airport runway, and then touch down on Gravina Island south of the airport terminal. A 0.4-mile-long airport return loop road would connect the airport terminal and the bridge terminus. The main road would continue around the southern end of the airport runway and then arc northward, extending parallel to and west of the airport runway approximately 2.2 miles to the northern end of the Airport Reserve zone. At the southern end of the runway, the road would be constructed

[3] Navigational clearances were determined based on consultation with the U.S. Coast Guard, discussions with cruise ship operators, review of current ship traffic in Tongass Narrows, International Navigation Association conceptual methods for channel widths, AASHTO guidelines, computer simulations, and real time simulations.

at a grade low enough to accommodate the planned future expansion of the runway, with the runway extended as an overpass of the road.

Alternative D1: 120-foot Bridge Between Tongass Avenue at Cambria Drive and Airport Terminal

The Alternative D1 bridge would cross Tongass Narrows directly east of the airport terminal. The bridge would be approximately 3,220 feet long and have a maximum height of approximately 160 feet. The main span of this bridge would have a vertical navigational clearance of 120 feet above high tide and a horizontal navigational clearance of 500 feet. Horizontal clearances were determined pursuant to footnote 3 above.

On Revillagigedo Island, the alternative alignment would connect to Tongass Avenue at Cambria Drive near the existing airport ferry terminal and rise along the hillside (see Figure 2.9). The bridge would cross over Tongass Avenue and Tongass Narrows, and then turn southward to parallel the shoreline on Gravina Island and touch down south of the airport terminal. A 0.4-mile-long airport return loop road would connect the airport terminal and the bridge terminus. The main road would continue around the southern end of the airport runway and then arc northward, extending parallel to and west of the airport runway approximately 2.2 miles to the northern end of the Airport Reserve zone. At the southern end of the runway, the road would be constructed at a grade low enough to accommodate the planned future expansion of the runway, with the runway extended as an overpass of the road.

Alternative F1: (Preferred): Bridges (200-foot East and 120-foot West) Between Tongass Avenue and Airport Terminal, via Pennock Island

Alternative F1 would cross Tongass Narrows via Pennock Island with two bridges (see Figure 2.10). One bridge would cross the East Channel and the other would cross the West Channel. The East Channel bridge would be approximately 3,715 feet long and have a maximum height of approximately 250 feet. The bridge would have a vertical navigational clearance of 200 feet above high tide and a horizontal navigational clearance of approximately 550 feet. The West Channel bridge would be approximately 2,750 feet long and have a maximum height of approximately 160 feet. The bridge would have a vertical navigational clearance of 120 feet above high tide and a horizontal navigational clearance of approximately 500 feet. Bridge heights over East and West Channels are designed to allow existing vessel traffic in Tongass Narrows to continue as it does today: cruise ships would use East Channel and other large vessels, such as Alaska Marine Highway System (AMHS) ferries and barge traffic, would continue to use the West Channel, predominantly. Horizontal clearances were determined pursuant to footnote 3 above.

On Revillagigedo Island, Alternative F1 would connect to Tongass Avenue south of Tatsuda's grocery store and near the southern end of the rock quarry. From this terminus, the alignment would rise to the southeast along the hillside (and east of the tank farm, the cemetery, and the above high tide Station), turn westward (skirting the southern end of the USCG Station property, north of the Forest Park Subdivision) and cross over Tongass Avenue approximately 1.4 miles south of downtown Ketchikan, then cross the East Channel to Pennock Island. The roadway would cross Pennock Island at grade. From Pennock Island, the West Channel bridge would cross to Gravina Island, touching down approximately 2.7 miles south of the airport runway. The road would continue northward approximately 4.9 miles to the northern end of the Airport

Reserve zone. A 1.2-mile airport access road would be constructed at the southern end of the airport runway. The airport access roadway would be constructed at a grade low enough to accommodate the planned future expansion of the runway, with the runway extended as an overpass of the road.

Alternative F3: Bridges (60-foot East and 200-foot West) Between Tongass Avenue and Airport, via Pennock Island

Similar to Alternative F1, Alternative F3 would have two bridges that cross Tongass Narrows via Pennock Island (see Figure 2.11). One bridge would cross East Channel and the other bridge would cross West Channel. The East Channel bridge would be approximately 2,065 feet long and have a maximum height of approximately 140 feet. The bridge would have a vertical navigational clearance of 60 feet above high tide, (lower than any of the other bridges), and a horizontal clearance of approximately 500 feet. The East Channel bridge height is designed to approach Revillagigedo Island at the approximate grade of South Tongass Avenue (at a T-intersection) while allowing smaller vessels and USCG vessels to transit the East Channel. The West Channel bridge would be approximately 3,270 feet long and have a maximum height of approximately 250 feet. The bridge would have a vertical navigational clearance of 200 feet above high tide and a horizontal navigational clearance of approximately 550 feet. The East Channel bridge would require large vessels, those with an air draft of greater than 60 feet, to use the West Channel of Tongass Narrows. Thus, cruise ships, AMHS ferries, and other large vessels would use the West Channel to continue to make through transits of Tongass Narrows.

On Revillagigedo Island, the East Channel bridge would connect to Tongass Avenue, approximately 1.5 miles south of downtown Ketchikan between the USCG Station and the Forest Park subdivision. From this terminus the bridge would cross the East Channel to Pennock Island. The roadway would cross Pennock Island at grade. From Pennock Island, the West Channel bridge would cross to Gravina Island, touching down approximately 2.7 miles south of the airport runway. The road would continue northward approximately 4.9 miles to the northern end of the Airport Reserve zone. A 1.2-mile airport access road would be constructed at the southern end of the airport runway. The airport access roadway would be constructed at a grade low enough to accommodate the planned future expansion of the runway, with the runway extended as an overpass of the road.

Alternative G2: Ferry Between Peninsula Point and Lewis Point

Alternative G2 would be a new ferry service for vehicles and passengers between Peninsula Point on Revillagigedo Island and Lewis Point on Gravina Island, crossing Tongass Narrows approximately 2 miles north of the airport (see Figure 2.17). The existing airport ferry would remain operational under Alternative G2.

This alternative would require construction of a new ferry terminal on each side of Tongass Narrows and two new ferry vessels. A 4.3-mile road would be constructed on Gravina Island that would extend from the ferry terminal southward approximately 2.6 miles, wrap around the southern end of the airport runway, and then turn northward to the airport terminal. The road at the southern end of the runway would be constructed at a grade low enough to allow for planned future expansion of the runway, with the runway extended as an overpass of the road.

The hours of operation (16 hours a day) and crossing frequency for the new ferry would be similar to the existing airport ferry schedule, with one vessel operating every 30 minutes in the winter months and two vessels operating in the summer (with crossings every 15 minutes).

Alternative G3: Ferry Between Downtown and South of Airport

Alternative G3 would be new ferry service for vehicles and passengers between Ketchikan (near the Plaza Mall at the intersection of Tongass Avenue and Jefferson Street) on Revillagigedo Island and a location approximately 0.6 miles south of the airport runway on Gravina Island (see Figure 2.18). The existing airport ferry would remain operational under Alternative G3.

This alternative would require construction of a new ferry terminal on each side of Tongass Narrows and two new ferry vessels. A road would be constructed on Gravina Island from the ferry terminal northward approximately 3.0 miles to the northern end of the Airport Reserve property. A 1.2-mile airport access road would be constructed around the southern end of the airport. The road at the southern end of the runway would be constructed at a grade low enough to allow for future planned expansion of the runway, with the runway extended as an overpass of the road.

The hours of operation (16 hours a day) and crossing frequency for the new ferry would be similar to the existing airport ferry schedule, with one vessel operating every 30 minutes in the winter months and two vessels operating in the summer (with crossings every 15 minutes).

Alternative G4: Ferry Between New Terminals Adjacent to Existing Terminals

Alternative G4 would be new ferry service for vehicles and passengers adjacent to the existing airport ferry route, crossing Tongass Narrows 2.8 miles north of downtown (see Figure 2.19). The existing airport ferry would remain operational under Alternative G4.

This alternative would require construction of a new ferry terminal on each side of Tongass Narrows, adjacent to the existing airport ferry terminals, and two new ferry vessels. A 3.2-mile road would be constructed on Gravina Island that extends southward from the airport ferry terminals; the roadway would wrap around the southern end of the airport runway, and then turn northward, extending parallel to and west of the airport runway approximately 2.2 miles to the northern end of the Airport Reserve property. The road at the southern end of the runway would be constructed at a grade low enough to allow for future planned expansion of the runway, with the runway extended as an overpass of the road.

The hours of operation (16 hours a day) and crossing frequency for the new ferry would be similar to the existing airport ferry schedule, with one vessel operating every 30 minutes in the winter months and two vessels operating in the summer (with crossings every 15 minutes).

Selection of the Preliminary Preferred Alternative

Based on the analyses in the EIS and public and agency input, the DOT&PF determined Alternative F1 to be its preliminary Preferred Alternative. Of the alternatives considered reasonable, Alternative F1 best satisfies the purpose of and need for the project while minimizing impacts on aviation, navigation, marine habitat, and the local economy. Alternative F1 would:

- Meet the need for improved convenience and reliability of access to Ketchikan International Airport and developable and recreation lands on Gravina Island;
- Promote environmentally sound, planned, long-term development on Gravina Island in conformance with Borough plans;
- Allow the continued safe passage of large cruise ships northbound and southbound through Tongass Narrows and East Channel;
- Allow continued separation of cruise ship traffic (East Channel) from the AMHS ferries and other marine traffic (West Channel);
- Avoid impact on floatplane facilities at Ketchikan International Airport and waterways designated for floatplane take-offs and landings in Tongass Narrows;
- Not intrude into the airspace of Ketchikan International Airport; and
- Avoid impacts to Ketchikan's tourism economy and local revenues.

Alternative F1 provides the additional benefit of improved access to Pennock Island, which contains a substantial amount of the Borough land base.

The DOT&PF received considerable input from the Ketchikan community strongly supporting Alternative F1 and, in January 2003, the Borough Assembly and the Ketchikan City Council both passed resolutions endorsing this alternative.

The USCG has indicated that closing East Channel to large vessel traffic likely would not meet the reasonable needs of navigation in Tongass Narrows. Alternative F1 is preferable to the other alternatives from a navigation safety standpoint because it would not contribute to conflicts at the navigational choke point next to Ketchikan International Airport and Alaska Ship and Drydock (as would Alternatives C3(a), C3(b), C4, and D1) and it would not require additional ship maneuvers or cause increased navigational risk for cruise ships transiting West Channel (as would Alternative F3). In addition, the National Oceanographic and Atmospheric Administration (NOAA), which is proposing to homeport the research vessel *Fairweather* in Ketchikan at the USCG base, has voiced strong support for an alternative that provides for large vessel transits in East Channel.

Alternative F1 would result in adverse impacts to wetlands and upland habitat; would change the character of the Pennock Island, which has historically been a community that values its physical separation from the larger Ketchikan community; and would increase traffic through the downtown core. There are two cultural properties, one on Pennock Island and one on Gravina Island, in the immediate vicinity of Alternative F1. The Pennock Island cultural property includes two cabins on the eastern side of the island. The cultural property on Gravina Island includes a large barge, a cabin, a large engine, and a boatway cleared of rocks. A culturally modified tree and numerous cut stumps can be found along the forested shoreline at this location. FHWA and DOT&PF have determined that these two cultural properties are eligible for placement in the National Register of Historic Places under Criterion D because of their information potential and that Alternative F1 would not affect these properties.

Alternative F1 is preferable to the other alternatives because it would not affect cruise ship access and operations nor would it affect Part 77 airspace. Alternative F1 also has beneficial impacts by creating a “hard link” (bridge) to Gravina Island and providing access to developable land there. Alternative F1 is the most expensive alternative.

All reasonable alternatives under consideration (including the No Action Alternative) have been developed to a comparable level of detail in this EIS and their comparative merits have been evaluated. The final selection of an alternative will not be made until the impacts of the alternatives and comments on the EIS and from public hearings have been fully evaluated. The final EIS will identify a preferred alternative.

SUMMARY OF BENEFICIAL AND ADVERSE IMPACTS

The following table, "Summary of Impacts by Alternative," presents the major environmental impacts, both beneficial and adverse, associated with each alternative.

IMPACT CATEGORIES	GRAVINA ACCESS PROJECT ALTERNATIVES									
	No Action	C3(a)	C3(b)	C4	D1	F1	F3	G2	G3	G4
Cost Factors										
Construction and Project Development ($ million)[1]	0	200	170	195	135	230	205[2]	60	70	60
O&M ($ million)	2.09	0.15	0.16	0.15	0.13	0.11	0.11	4.98	4.98	4.97
50-yr Lifecycle ($ million)[1]	10	160	135	160	105	190	170	90	100	90
Purpose and Need Factors										
Reliability of Access										
-Hours of operation per day[3]	16	24	24	24	24	24	24	16	16	16
-Trips per hour (summer/winter)	4/2	unlimited	unlimited	unlimited	unlimited	unlimited	unlimited	8/4	8/4	8/4
-Hours of downtime per day[3]	8	0	0	0	0	0	0	8	8	8
-Restrictions to hazmat transport and oversized/overweight[4] vehicles? (Y/N)	Y	N	N	N	N	N	N	Y	Y	Y
Efficiency & Convenience of Access										
Vehicular travel time (in minutes) to airport from:										
-Downtown Ketchikan	27	14	12	11	11	13	13	42[5]	35[5]	25[5]
-Carlanna Creek	19	6	4	3	3	21	21	34[5]	34[5]	17[5]
-Ward Cove	25	8	6	9	7	27	27	34[5]	40[5]	23[5]
Vehicular travel time (in minutes) to developable land from:										
-Downtown Ketchikan	NA[6]	17	17	15	14	7	7	34[5]	29[5]	29[5]
-Carlanna Creek	NA[6]	9	9	7	6	15	15	26[5]	28[5]	21[5]
-Ward Cove	NA[6]	11	11	13	10	21	21	26[5]	34[5]	27[5]
Economic Development										
Projected development on Gravina Island (in acres)										
-Residential	15	287	287	287	287	383	383	50	50	50
-Industrial/commercial	5	22	22	22	22	22	22	22	22	22
Projected development on Pennock Island (in acres)										
-Residential	0	0	0	0	0	75	75	0	0	0
-Industrial/commercial	0	0	0	0	0	1	1	0	0	0
Social and Economic Impacts										
-Number of neighborhoods bisected	0	0	0	0	0	0	0	0	0	0

IMPACT CATEGORIES	GRAVINA ACCESS PROJECT ALTERNATIVES									
	No Action	C3(a)	C3(b)	C4	D1	F1	F3	G2	G3	G4
-Residential relocations	0	1	2	0	0	0	0	0	0	0
-Business relocations	0	0	0	1	1	0	0	1	6	0
-Estimated number of affected parcels	0	23	28	15	14	30	27	13	15	14
-Total construction jobs[7]	NA	360	310	390	290	470	460	250	270	250
-Annual O&M jobs[8]	16	2	2	2	1	1	1	51	51	51
-Reductions in cruise-related spending ($ million)	0	0	2.2	0	2.2	0	3.2[9]1.5[10]/0[11]	0	0	0
-User economic benefits ($ million)	0	55.2	62.3	64.2	70.0	27.1	22.6	-0.2	-0.2	2.0
Transportation Impacts										
Miles of new roadway	NA	3.8	4.0	3.7	3.4	8.0	6.9	3.6	3.8	3.2
Intrusion into Part 77 airspace (Y/N)	N	Y	Y	Y	Y	N	N	N	N	N
Percentage of SVFR operations potentially affected	0	90	90	90	90	10[12]	5[12]	0	0	0
Percentage of large ships diverted from Ketchikan	0	0	2	0	2	0	4/2/0[13]	0	0	0
Natural Resources Impacts										
Number of waterbody crossings	0	9	10	9	9	15	15	9	9	0
Upland habitat losses (acres)	0.0	5.1	9.1	10.4	8.6	10.7	4.8	7.6	7.0	4.7
Wetland habitat losses (acres)	0.0	44.1	42.4	39.0	36.3	103.3	85.2	42.5	47.5	35.4
Essential Fish Habitat losses (acres)	0.0	6.6	6.7	6.9	4.2	0.6	14.7[2]	1.0	1.7	0.5
Cultural Resources Impacts										
Known historic/archaeological properties in area of potential effect	0	0	0	0	0	2	0	0	0	0

IMPACT CATEGORIES	GRAVINA ACCESS PROJECT ALTERNATIVES									
	No Action	C3(a)	C3(b)	C4	D1	F1	F3	G2	G3	G4

[1] Rounded to nearest 5 million due to the variable and preliminary nature of engineering.
[2] Assumes modification of West Channel would be required
[3] Hours of operation and downtimes would be the same for all ferries
[4] Ferry service is typically limited to vehicles less than 20 feet in length. The weight limit is 30,000 pounds.
[5] Values provided represent travel times using new ferry facility only. Travel time for the existing airport ferry would the same as for the No Action alternative.
[6] Not applicable – the No Action alternative does not include access to developable land
[7] Assumes a three-year construction period. Jobs can be full-time, part-time, or seasonal. The number of construction jobs for Alternative F3 includes jobs related to channel modification.
[8] Number of jobs represents one full-time employee
[9] Represents reduction in spending in the first 2 to 3 years following closure of East Channel to large cruise ships: a 4 percent reduction in large cruise ship calls to Ketchikan is anticipated during that time.
[10] Represents reduction in spending over the long-term following closure of the East Channel to large cruise ships: after a 2 to 3-year "adjustment period," the long-term reduction of large cruise ship calls to Ketchikan is estimated to be 2 percent.
[11] If West Channel were modified to improve navigation safety, there would be no reduction in cruise-related spending with Alternative F3.
[12] The Federal Aviation Administration's preliminary analysis of Alternatives F1 and F3 indicated that, although the alternatives appear to be outside the Exemption 4760 boundaries, some modification of the boundaries may be required. The analysis also indicates that a Pennock Island crossing would be "less disruptive" to floatplane operations than the other bridge alternatives. For purposes of this analysis, HDR assumed 10 percent and 5 percent reductions in SVFR operations for Alternatives F1 and F3, respectively.
[13] A 4 percent reduction in large cruise ship calls to Ketchikan is estimated to last 2 to 3 years. It is estimated that following this "adjustment period" some ships will return to Ketchikan. The long-term reduction of large cruise ship calls is estimated to be 2 percent. If West Channel were modified to improve navigation safety, there would be no reduction in cruise ship calls to Ketchikan with Alternative F3.

AREAS OF CONTROVERSY

Issues raised by the public and agencies are outlined in Chapter 7 of the EIS. The primary areas of controversy among the public have related to costs of project construction; effects on marine navigation, the cruise ship industry, and the economy; encroachment into Part 77 airspace; impacts on floatplane facilities and operations; increased traffic through the downtown core; and impacts on cultural resources on Pennock Island.

MAJOR UNRESOLVED ISSUES

The Federal Aviation Administration (FAA) may adjust the Exemption 4760 airspace to include the area of Alternative F1, which would affect Special Visual Flight Rules (SVFR) operations there.[4] Potential mitigation requirements pursuant to Section 404 of the Clean Water Act have not been determined.

FEDERAL ACTIONS NECESSARY

A Section 404 permit from the U.S. Army Corps of Engineers (COE) would be required for impacts to wetlands and waters subject to Section 404 jurisdiction. The Section 404 permit application and approval also requires Endangered Species Act Section 7 consultation with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) and approval from the U.S. Environmental Protection Agency (EPA_ under Section 102 of the Marine Protection, Research, and Sanctuaries Act for ocean disposal of in-water excavated materials.

A Section 9 Bridge Permit from the USCG would be required for any bridge constructed over navigable waters, which includes Tongass Narrows.

The EPA would require a National Pollutant Discharge Elimination System (NPDES) construction permit for all construction activities that result in ground disturbance of 1 acre or greater.

EIS AVAILABILITY

The entire EIS is available free of charge on compact disk (CD) for viewing electronically. The document is also available for viewing on the project web site at www.gravina-access.com. Bound versions of the document are available for public review at the following locations:

Ketchikan Public Library
629 Dock Street
Ketchikan, Alaska

[4] FAA Exemption 4760 permits commercial air taxi and commuter pilots to operate below a 500-foot minimum altitude in Ketchikan's Class E airspace (Class E airspace encompasses the area used by all aircraft departing from or arriving at Ketchikan International Airport and Ketchikan area floatplane facilities, and aircraft passing through Tongass Narrows airspace) when visibility and ceiling minimums drop below the minimum requirements for operating under normal visual flight rules. The Special Visual Flight Rules (SVFR) of Exemption 4760 control the number of aircraft in the airspace when flying conditions are particularly challenging, ensure that pilots receive appropriate traffic advisories from the Ketchikan Flight Service Station, and separate aircraft flying under instrument flight rules (e.g., commercial aircraft) from those operating under visual flight rules.

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For information on obtaining a CD or bound version of the EIS, contact Mark Dalton at HDR Alaska at (907) 644-2000, or visit the project website at http://www.gravina-access.com/.